NASA TT F-9241

GROUND STATION COMMITTEE

CAPE KENNEDY 1-2 DECEMBER 1964

GPO PRICE $ _____

CSFTI PRICE(S) $ _____

Hard copy (HC) $1.00

Microfiche (MF) .50

ff 653 July 65

Translation of "Ground Station Committee, Cape Kennedy, 1-2 December 1964." from Compte Rendu de la France Concernant la Station Terrienne de Pleumeur-Bodou, ~~pp. 1-3.~~ Centre Nationale D'Etudes des Telecommunications, (France) ~~Département "Transmission."~~

N65 35393

FACILITY FORM 602

(ACCESSION NUMBER) 4 (PAGES) (NASA CR OR TMX OR AD NUMBER)

(THRU) 1 (CODE) 11 (CATEGORY)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON JANUARY 1965

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ABSTRACT

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The article examines present operation and accomplishments by the Pleumeur-Bodou tracking station with the Relay and Telstar series of satellites. Technical changes now being undertaken, and projects for expanded future operation are outlined.

I. Station Operation

Since the beginning of March 1964, the Pleumeur-Bodou station has participated in:

24 technical tests with Relay 2 and 18 with Telstar 2

8 demonstrations with Relay 1, 17 with Relay 2, and 18 with Telstar 2, which were for the most part television.

The tests confirmed previously obtained results, which were published in reports already distributed. No notable change was observed in the test results in comparison with earlier periods.

A particularly interesting test was performed in April 1964: a direct link between France and Japan was completed via Telstar 2.

Two technical tests took place with passes 2190 and 2203 on 13 and 15 April respectively before a public television demonstration (received in France) on pass 2209, 16 April.

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*Numbers given in the margin indicate the pagination in the original foreign text.

During this test the Pleumeur-Bodou station radioed all operations on board the satellite, which necessitated the reception and decoding in the actual telemetering time. Preliminary telemetry reception and transmission telecommand tests took place on previous days in cooperation with the Andover station. /2

Pictures received at Pleumeur-Bodou during the April 16 demonstration were satisfactory, although reception conditions were particularly difficult:

- distance from the satellite to Pleumeur-Bodou: about 14,000 km
- angle of sight giving a loss of satellite antenna gain of about 4 dB.

The power received at the maser level at Pleumeur-Bodou was between 99 and 102.5 dBm.

II. Future Program

The Pleumeur-Bodou station is presently undergoing modification to participate in the C.S.C. project HS 303. To effect these changes, its operational activity has already been interrupted for two periods from 24 July to 16 August and from 14 September to 9 October. It has again been interrupted from 1 December for final modifications.

These modifications consist briefly of adapting the station to the characteristics of the synchronous HS 303 satellite and of augmenting the viability in view of a quasi-continuous commercial exploitation.

For the tracking equipment the principal modifications are:

- modification of the antenna control circuits to adopt them to the slower movement of the HS 303 (a reduction of the rate of search information furnished the antenna),

- modification of the Vernier autotracker by addition of a type TE01 coupler to permit performance with a rectilinearly polarized wave and to give indication of the polarization direction,

- regrouping of alarms in a single place on the control board,

- improving the system's antenna motor control lifetime by duplicating certain components.

For the telecommunications equipment these are:

- replacing the frequency shift oscillators on the transmitter and receiver for adaptation to the HS 303 frequencies and increasing lifetime,

- adaptation of ultrafrequency equipment to the HS 303 frequencies,

- installation of a polarization changer to permit emitting and receiving crossed rectilinear polarizations,

- Insulating the maser magnet to minimize drift due to temperature and installation of a second identical maser,

- improving of the duration of power transmitter operation.

For the energy supply:

Installation of a generating group without break, permitting noninterruption of operation in case of a general supply failure by the French network. Furthermore, a high capacity cable is laid to connect the station to the general French telephone network.

As a result of these modifications and of exploitation of the station for traffic distribution it becomes impossible to continue use of the Relay and Telstar satellites. Therefore we now no longer intend to keep the Pleumeur-Bodou station operating with the Relay and Telstar satellites.

Concerning the future French plans as to tests with the "Advanced Technology Syncom" satellite we must say that we presently have very little information on this project. We attach great importance to the project and would like to receive, progressively as it is published, the most detailed information possible. Helped by this information, we will study the possibilities of our participation in this program.